

In re Application of WILLIAMS et al.
Serial No. 09/849,170

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REMARKS

The Office action has been carefully considered. The Office action rejected claims 1, 2, 3, 8, and 17 under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. US 6,633,282 to Monroe et al. ("Monroe"). Further, the Office action rejected claims 1-3, 5, 8-14 and 17-22 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. US 5,239,292 to Willan ("Willan"). Further yet, the Office action rejected claims 4, 6, 7, 15, and 16 under 35 U.S.C. § 103(4) as being unpatentable over Willan in view of U.S. Patent No. US 6,188,392 to O'Connor et al. ("O'Connor") as well as being unpatentable over Monroe in view of O'Connor. Applicants respectfully disagree.

By present amendment, claims 1, 9, and 17 have been amended for clarification and not in view of the prior art. Applicants submit that the claims as filed were patentable over the prior art of record, and that the amendments herein are for purposes of clarifying the claims and/or for expediting allowance of the claims and not for reasons related to patentability. Reconsideration is respectfully requested.

Applicants thank the Examiner for the interview held (by telephone) October 25, 2004. During the interview, the Examiner and applicants' attorney discussed the claims with respect to the prior art. The essence of applicants' position is incorporated in the remarks below.

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Prior to discussing reasons why applicants believe that the claims in this application are clearly allowable in view of the teachings of the cited and applied references, a brief description of the present invention is presented.

Applicants' technique is generally directed towards providing thickness information for digital ink. To this end, applicants may use a thickness conversion component that converts movement of a pen across a surface or tilting of a pen into thickness information for digital ink data. The pen in applicants' technique may include at least one accelerometer that is used to generate either ballistic movement or ballistic pen tilting information. For example, the accelerometer generates the movement or tilt information in the form of pulses, the width of each pulse being directly related to the acceleration of the pen movements or the tilt of the pen, respectively. The thickness conversion component converts the acceleration information, with or without additional information such as coordinate information, available pressure information, pen angle information, and vector information, into thickness information for digital ink. This thickness information may be used to generate variably thick lines, which may be useful for a variety of applications, for example, better display and improved recognition.

Note that the above description is for example and informational purposes only, and should not be used to interpret the claims, which are discussed below.

Rejections based on §102(e)

Turning to the claims, independent claim 1, as amended, recites a computer system, comprising a writing instrument that generates, using a ballistic information generator, movement information including acceleration information from a user's

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handwriting and a conversion component that utilizes the acceleration information to generate line thickness information.

The Office action rejected claim 1 as being anticipated by Monroe. More specifically, the Office action contends that Monroe teaches a computer system comprising a writing instrument that generates movement information including acceleration information from a user's handwriting. Figs. 1-3, items 10, 24, and 28 of Monroe are referenced. Further, the Office action contends that Monroe teaches a conversion component that utilizes the acceleration information to generate line thickness information. The abstract and column 3, line 38 to column 4, line 22 of Monroe is referenced. Applicants respectfully disagree.

Monroe is directed, generally, toward a system and method for using a pen that includes directional sensors for determining the direction and length of pen strokes. A transmitter is provided in the pen barrel for transmitting the stroke signals directly to a computer for input and processing each stroke to provide an accurate representation of the pen stroke as it is being made. The sensor system breaks the stroke signal into typical "x" and "y" coordinates. The pen is further able to determine a "z" axis coordinate by monitoring a pressure sensor so that the thickness and boldness of the stroke may be recorded. That is, the thickness of the line is determined by a pressure sensor when pressed against a writing surface and is a function of how much pressure is applied down on the pen itself.

In contrast, claim 1 recites a writing instrument that generates, using a ballistic information generator, movement information including acceleration information from a user's handwriting and a conversion component that utilizes the

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acceleration information to generate line thickness information. That is, the thickness information is generated from the acceleration information and not a pressure sensor as Monroe teaches. The system and technique disclosed by Monroe is significantly different from applicants' and uses a pressure sensor to generate thickness information rather than acceleration information as claimed by applicants. Clearly, claim 1 is allowable over the Monroe and other prior art of record for at least these reasons.

Applicants respectfully submit that dependent claims 2, 3, and 8 by similar analysis, are allowable. Each of these claims depends either directly or indirectly from claim 1 and consequently includes the recitations of independent claim 1. As discussed above, Monroe fails to disclose the recitations of claim 1 and therefore these claims are also allowable over the prior art of record. In addition to the recitations of claim 1 noted above, each of these dependent claims includes additional patentable elements.

Turning to the next claim rejected under §102(e), claim 17 is currently amended to depend from claim 9. Applicants respectfully traverse the rejection in the Office action which is presumably based upon an analysis with respect to dependency that is ultimately from claim 1.

Rejections based on §103(a)

As discussed above, amended claim 1 recites a computer system, comprising a writing instrument that generates, using a ballistic information generator, movement information including acceleration information from a user's

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handwriting and a conversion component that utilizes the acceleration information to generate line thickness information.

The Office action rejected claim 1 as being unpatentable over Willan. More specifically, the Office action contends that Willan teaches a writing instrument that generates movement information, the movement information including acceleration information from a user's handwriting. Column 3, lines 13 to column 4, line 16, column 4, line 45 to column 5, line 36, and column 8, lines 3-6 of Willan are referenced. Further, the Office action contends that although Willan does not teach a conversion component that utilizes the acceleration information to generate line thickness information, that this recitation would have been obvious to a person skilled in the art at the time the invention was made because Willan teaches that a line thickness increases with velocity or shape changes in a brush. Applicants respectfully disagree.

Willan is directed, generally, to a graphics system having an input device, an associated computer for detecting changes in the position of the input device relative to a writing surface, and a monitor for displaying patterns which follow the movement of the input device. In particular, Willan teaches a system that attempts to simulate a brush with a pressure-sensitive input device. Similar to Monroe, the system of Willan also teaches a pressure sensor system in the input device that breaks the stroke signal into typical "x" and "y" coordinates. The input device is further able to determine a "z" axis coordinate as well by monitoring a pressure sensor. Thus, these three parameters are used to interpret the movement of the tip of input device when engaged with a writing surface to yield a myriad of stroke

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information to display on the monitor, *i.e.*, "painting." Willan teaches that the thickness of lines displayed may vary based upon an analysis of the sensed pressure in the "z" direction at the tip of the input device on the writing surface.

In stark contrast, claim 1 recites a writing instrument that generates, using a ballistic information generator, movement information including acceleration information from a user's handwriting and a conversion component that utilizes the acceleration information to generate line thickness information. That is, the thickness information is generated from the acceleration information and not a pressure sensor as Willan teaches. The system of Willan necessarily requires a pressure sensor in order to measure pressure at the point of an input device and does not teach or even suggest generating movement information including acceleration information to determine line thickness. Quite differently, claim 1 recites a writing instrument that generates, using a ballistic information generator, movement information including acceleration information and a conversion component that utilizes the acceleration information to generate line thickness information. Clearly, claim 1 is allowable over Willan, whether considered alone or in any permissible combination of any other prior art of record for at least these reasons.

By law, in order to establish *prima facie* obviousness of a claimed invention, all of the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). In addition, "all words in a claim must be considered in judging the patentability of that claim against the prior art." *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970). Further, if prior

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art, in any material respect teaches away from the claimed invention, the art cannot be used to support an obviousness rejection. *In re Geisler*, 116 F.3d 1465, 1471, 43 USPQ2d 1362, 1366 (Fed Cir. 1997). The claims of the present invention are thus clearly patentable over the teachings of the cited and applied references as a matter of law. Moreover, Willan teaches away from applicants' invention by using a pressure sensor in order to determine line thickness information rather than using acceleration information as claimed by applicants.

Applicants respectfully submit that dependent claims 2- 8 by similar analysis, are allowable. Each of these claims depends either directly or indirectly from claim 1 and consequently includes the recitations of independent claim 1. Neither Willan nor Monroe teaches or even suggests the recitations of claim 1 and therefore these claims are also allowable over Willan and Monroe, whether considered alone or in any permissible combination of any prior art of record. In addition to the recitations of claim 1 noted above, each of these dependent claims includes additional patentable elements.

For example, claim 8 recites an accelerometer configured to generate tilt information. In one embodiment of the present invention, a thickness conversion component may convert information of tilting of a pen into thickness information for digital ink data. The pen may include at least one accelerometer that is used to generate pen tilting information that is received by the thickness conversion component. Nowhere in Willan or any other prior art of record is this recitation disclosed. Instead, Willan describes a method for simulating gravity as if the writing surface (*i.e.*, representing a canvas) was tilted to an angle. (See, abstract,

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column 2, line 41-50 of Willan) That is, the writing surface is simulated to be tilted, but the system is unable to determine if the input device itself is tilted. Applicants submit that claim 8 is allowable over the prior art of record for at least this additional reason.

Turning to the next independent claim, claim 9 recites a computer system, comprising a writing instrument that generates, using a ballistic information generator, movement information including acceleration information from a user's handwriting and a conversion component that utilizes the acceleration information to generate line thickness information based upon spacing of plots in a map of a plot of the movement information.

The Office action rejected claim 9 as being unpatentable over Willan. More specifically, the Office action contends that Willan teaches a writing instrument that generates movement information, the movement information including acceleration information from a user's handwriting. Column 3, lines 13 to column 4, line 16, column 4, line 45 to column 5, line 36, and FIG. 4 of Willan are referenced. Further, the Office action admits that Willan does not teach a conversion component that utilizes the acceleration information to generate line thickness information based upon spacing of plots in a map of a plot of the movement information, but contends that this recitation would have been obvious to a person skilled in the art at the time the invention was made because Willan teaches that a line thickness increases with velocity or shape changes in a brush. Applicants respectfully disagree.

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As discussed above, Willan teaches a pressure sensor system in the input device that breaks the stroke signal into typical "x", "y" and "z" coordinates. Thus, these three parameters are used to interpret the movement of the tip of input device when engaged with a writing surface to yield a myriad of information to display on the monitor, *i.e.*, "painting." Willan teaches away from applicants' invention by using a pressure sensor in order to determine line thickness information rather than using acceleration information as claimed by applicants. In specific, Willan teaches that the thickness of lines displayed may vary based upon an analysis of the sensed pressure in the "z" direction at the tip of the input device on the writing surface. Willan fails to teach or even suggest the recitations of claim 9 and therefore claim 9 is also allowable over Willan, whether considered alone or in any permissible combination of any prior art of record.

Applicants respectfully submit that dependent claims 10-14 and 17, by similar analysis, are allowable. Each of these claims depends either directly or indirectly from claim 9 and consequently includes the recitations of independent claim 9. As discussed above, Willan fails to teach or even suggest the recitations of claim 9 and therefore these claims are also allowable over Willan whether considered alone or in any permissible combination of any prior art of record. In addition to the recitations of claim 9 noted above, each of these dependent claims includes additional patentable elements.

Dependent claims 15 and 16, which are ultimately dependent from claim 9, were rejected in the Office action as being unpatentable over Willan in view of O'Connor and also rejected as being unpatentable over Monroe in view of

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O'Connor. Applicants respectfully submit that dependent claims 15 and 16, by similar analysis, are allowable. Each of these claims depends either directly or indirectly from claim 9 and consequently includes the recitations of independent claim 9. As discussed above, Willan and Monroe each fails to teach or even suggest the recitations of claim 9 and therefore these claims are also allowable over both Willan and Monroe whether considered alone or in any permissible combination of any prior art of record. In addition to the recitations of claim 9 noted above, each of these dependent claims includes additional patentable elements.

Turning to the last independent claim, claim 18 recites a computer system, comprising a writing instrument that generates movement information including acceleration and tilt information from a user's handwriting and a conversion component that utilizes the acceleration information to generate line thickness information based upon spacing of plots in a map of a plot of the tilt information.

The Office action rejected claim 18 for the exact reasons that claim 9 was rejected. Applicants respectfully disagree.

As discussed above, Willan teaches a pressure sensor system in the input device that breaks the stroke signal into typical "x", "y" and "z" coordinates. Thus, these three parameters are used to interpret the movement of the tip of input device when engaged with a writing surface to yield a myriad of information to display on the monitor, i.e., "painting." Willan teaches away from applicants' invention by using a pressure sensor in order to determine line thickness information rather than using acceleration information as claimed by applicants. In specific, Willan teaches that the thickness of lines displayed may vary based upon

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an analysis of the sensed pressure in the "z" direction at the tip of the input device on the writing surface. Nowhere in any prior art of record is the concept of tilt information about the writing instrument gleaned from acceleration information taught or even suggested. Willan fails to teach or even suggest the recitations of claim 18 and therefore claim 18 is also allowable over Willan, whether considered alone or in any permissible combination of any prior art of record.

Applicants respectfully submit that dependent claims 19-22, by similar analysis, are allowable. Each of these claims depends either directly or indirectly from claim 18 and consequently includes the recitations of independent claim 18. As discussed above, Willan fails to teach or even suggest the recitations of claim 18 and therefore these claims are also allowable over Willan, whether considered alone or in any permissible combination of any prior art of record. In addition to the recitations of claim 18 noted above, each of these dependent claims includes additional patentable elements.

For at least these additional reasons, applicants submit that all the claims are patentable over the prior art of record, whether considered alone or in any permissible combination. Reconsideration and withdrawal of the rejections in the Office Action is respectfully requested and early allowance of this application is earnestly solicited.

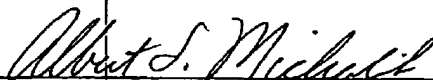
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CONCLUSION

In view of the foregoing remarks, it is respectfully submitted that claims 1-22 are patentable over the prior art of record, and that the application is in good and proper form for allowance. A favorable action on the part of the Examiner is earnestly solicited.

If in the opinion of the Examiner a telephone conference would expedite the prosecution of the subject application, the Examiner is invited to call the undersigned attorney at (425) 836-3030.

Respectfully submitted,



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2730 Second Amendment

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